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"Planing" to expose what the machine is learning (15'+5')

Wednesday, December 13, 2017 9:20 AM (20 minutes)

Applications of machine learning tools to problems of physical interest are often criticized for producing sensitivity at the expense of transparency. In this talk, I explore a procedure for identifying combinations of variables – aided by physical intuition – that can discriminate signal from background. Weights are introduced to smooth away the features in a given variable(s). New networks are then trained on this modified data. Observed decreases in sensitivity diagnose the variable's discriminating power. Planing also allows the investigation of the linear versus non-linear nature of the boundaries between signal and background. I will demonstrate these features in both an easy to understand toy model and an idealized LHC resonance scenario.

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Session Classification: Learning from data